

## 2.1 Use Inductive Reasoning

Conjecture-unproven statement that is based on observations

Inductive reasoning-reasoning using a # of examples to make a prediction

Patterns:

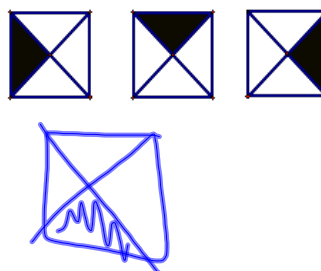
Ex 1: 1, 3, 6, 10, 15, 21

Ex 2: A, B, B, C, C, C, D, D, D, D, EEEEEE

Ex 3:  $1 \times 9 + 2 = 11$   
 $12 \times 9 + 3 = 111$   
 $123 \times 9 + 4 = 1111$   
 $1234 \times 9 + 5 = 11111$

Ex 4: 3, 5, 7, 9

Ex 5:



Make a conjecture based on the given information.

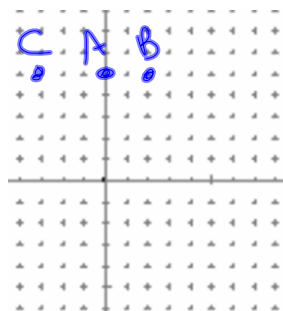
Ex 6: ABCD is a square



$$AB = BC = CD = DA$$

Ex 7: A(0,5) B(2, 5) C(-2, 5)

A, B, C are collinear



Counterexample-one false example that shows a conjecture is not true

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

8. Given:  $x$  is an integer.

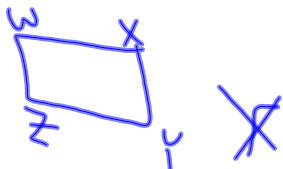
Conjecture:  $-x$  is negative.

$F; x = -2$

9. Given:  $WXYZ$  is a rectangle.

Conjecture:  $WX = YZ$  and  $WZ = XY$

$T$



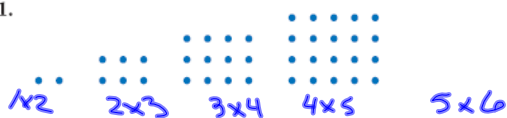
Make a conjecture about the next item in each sequence.



5.  $-8, -5, -2, 1, 4$

Make a conjecture about the next item in each sequence.

11.



13.  $1, 2, 4, 8, 16$   $32$

15.  $\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, 3$   $\frac{11}{3}$

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

29. Given:  $\angle 1$  and  $\angle 2$  are complementary angles.

Conjecture:  $\angle 1$  and  $\angle 2$  form a right angle.

$F$

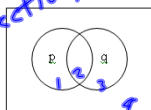


## Venn Diagrams

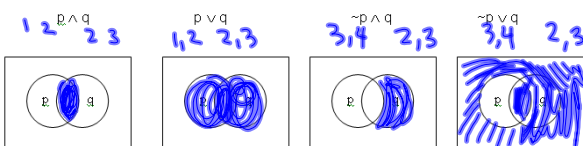
Venn Diagrams

$\wedge$  AND (intersection)

$\vee$  OR (union)

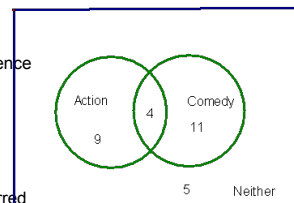


$\sim$  not



Use the Venn diagram to answer the following questions.

Jack surveyed the students in his science class to find out what movies they preferred.



1.  $29$  How many students were surveyed?

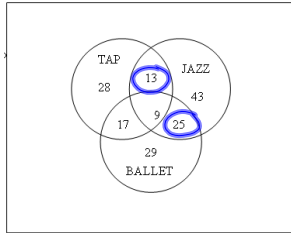
2.  $13$  How many students preferred Action?

3.  $4$  How many students preferred Action and Comedy?

4.  $14$  How many students did not prefer comedy?

$9+5$

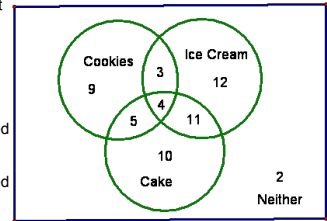
Use the following Venn diagram about dance classes to answer the questions.



1. 9 How many students are in tap, jazz, and ballet?
2. 121 How many are in tap or ballet?
3. 25 How many are in jazz and ballet and not tap?
4. 34 How many are in jazz and ballet?

$$25 + 9$$

Use the following Venn diagram about dessert preferences to answer the questions.



1. 56 How many people were surveyed?
2. 21 How many people preferred cookies?
3. 9 How many people preferred cookies and cake?
4. 26 How many people did not prefer ice cream?
5. 45 How many people preferred cake or ice cream?
6. 4 How many people preferred cookies and cake and ice cream?

$$9, 5, 10, 2$$

## Homework

p75-78

#s 5-10, 13-17,

30, 32, 37